

Into Our Skies: Space in Schools

Classroom Activity: Why do we get Day and Night?

National Curriculum Learning Outcome: Use the idea of Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.

Focus of this activity: Pupils will think about how the Earth rotates anti-clockwise and what that means in terms of sunrise and sunset.

Resources required: (Optional for demonstration if wanted). Globe (or ball to represent the Earth), torch (or light source), Lego person (or similar toy figure), blu tack.

Starter: Use the dance session on night and day and shadows to recap how the Earth rotates anti-clockwise. Remember the Earth rotates once in 24 hours meaning all of Earth's sphere is not lit in one go.

Teaching Questions:

- Do pupils understand that we get day/night as Earth rotates, and as different sides of the Earth's sphere is lit by the Sun?
- As the Earth rotates anti-clockwise the sun rises in the East and sets in the West.
- The Earth's rotation results in different time zones on Earth.

Student Activity:

This activity works best when done as a classroom demonstration led by the teacher. Pupils will often struggle with where East and West are located on the globe as they rotate. This is because "east-wards" is continuous rather than a fixed-point East.

- Use the globe or the video in the power point and identify the East and West coast of America (e.g., Los Angeles and New York).
- Place the Lego person in New York using the blu tack.
- Rotate the globe so that New York is in night-time, i.e., not lit by your light source (e.g., a torch).
- Rotate the globe anti-clockwise. Which way does the Lego person have to look to see the sun appear (rise?) Do they look over land (West towards Los Angeles) or do they look over the ocean (East towards the UK)?
- Continue to rotate the globe anti-clockwise so the Lego person is in daylight and stop just as they start to enter darkness. Which way does the Lego person have to look to see the Sun setting? Do they look over land (West towards Los Angeles) or do they look over the ocean (East towards the UK)?

Extension:

- What is the length of the day on other planets in our Solar System?
- Sunrise in Space: Investigate how many sunrises and sunsets there are on the International Space Station.

Additional Links:

- NASA science page on the length of day on each planet in the Solar System. Interestingly, Venus has the longest day in the Solar System at over 5000 Earth days!
<https://spaceplace.nasa.gov/days/en/>
- Sunrise on the international space station from the European Space Agency
[https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/mISsion_possible/Sunsets from the International Space Station](https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/mISsion_possible/Sunsets_from_the_International_Space_Station)